

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

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- 1 1. (Currently amended) A method for facilitating a key exchange that  
2 operates with a pre-shared secret key and that hides identities of parties involved  
3 in the key exchange, comprising:  
4 initially establishing a negotiated secret key between a first party and a  
5 second party by performing communications between the first party and the  
6 second party across a network;  
7 wherein the communications between the first party and the second party  
8 do not allow an eavesdropper to determine the negotiated secret key;  
9 encrypting an identifier for the first party using a first key that is a function  
10 of a group secret key and the negotiated secret key to form an encrypted identifier;  
11 wherein the group secret key is known to members of a group, including  
12 the first party and the second party, but is kept secret from parties outside of the  
13 group;  
14 sending the encrypted identifier from the first party across the network to  
15 the second party;  
16 allowing the second party to decrypt the encrypted identifier by using the  
17 group secret key and the negotiated secret key;  
18 allowing the second party to use the identifier to ~~lookup~~ look up the pre-  
19 shared secret key that was previously established between the first party and the  
20 second party; and

21 using the pre-shared secret key in forming at least one subsequent  
22 communication between the first party and the second party.

1 2. (Cancelled).

1 3. (Currently amended) The method of ~~claim 2~~ claim 1, wherein  
2 establishing the negotiated secret key involves using the Diffie-Hellman method  
3 to establish the negotiated secret key.

1 4. (Original) The method of claim 1, wherein the second party is a  
2 firewall through which the first party seeks to communicate.

1 5. (Original) The method of claim 4, wherein the first party is a  
2 person seeking to communicate through the firewall from one of a number of  
3 possible Internet Protocol (IP) addresses.

1 6. (Original) The method of claim 1, wherein the group secret key is  
2 one of a plurality of group secret keys maintained by the group.

1 7. (Currently amended) A method for facilitating a key exchange that  
2 operates with a pre-shared secret key and that hides identities of parties involved  
3 in the key exchange, comprising:

4 initially establishing a negotiated secret key between a first party and a  
5 second party by performing communications between the first party and the  
6 second party across a network;

7 wherein the communications between the first party and the second party  
8 do not allow an eavesdropper to determine the negotiated secret key;

9 allowing the first party to encrypt an identifier for the first using a first key  
10 that is a function of a group secret key and the negotiated secret key to form an  
11 encrypted identifier;

12 wherein the group secret key is known to members of a group, including  
13 the first party and the second party, but is kept secret from parties outside of the  
14 group;

15 receiving the encrypted identifier at the second party from the first party  
16 across the network;

17 decrypting the encrypted identifier by using the group secret key and the  
18 negotiated secret key;

19 using the identifier to lookup the pre-shared secret key that was previously  
20 established between the first party and the second party; and

21 using the pre-shared secret key in forming at least one subsequent  
22 communication between the first party and the second party.

1 8. (Cancelled)

1 9. (Currently amended) The method of ~~claim 8~~ claim 7, wherein  
2 establishing the negotiated secret key involves using the Diffie-Hellman method  
3 to establish the negotiated secret key.

1 10. (Original) The method of claim 7, wherein the second party is a  
2 firewall through which the first party seeks to communicate.

1 11. (Original) The method of claim 10, wherein the first party is a  
2 person seeking to communicate through the firewall from one of a number of  
3 possible Internet Protocol (IP) addresses.

1           12.   (Original) The method of claim 7, wherein the group secret key is  
2 one of a plurality of group secret keys maintained by the group.

1           13.   (Currently amended) A computer-readable storage medium storing  
2 instructions that when executed by a computer cause the computer to perform a  
3 method for facilitating a key exchange that operates with a pre-shared secret key  
4 and that hides identities of parties involved in the key exchange, the method  
5 comprising:

6           initially establishing a negotiated secret key between a first party and a  
7 second party by performing communications between the first party and the  
8 second party across a network;

9           wherein the communications between the first party and the second party  
10 do not allow an eavesdropper to determine the negotiated secret key;

11           encrypting an identifier for the first party using a first key that is a function  
12 of a group secret key and the negotiated secret key to form an encrypted identifier;

13           wherein the group secret key is known to members of a group, including  
14 the first party and the second party, but is kept secret from parties outside of the  
15 group;

16           sending the encrypted identifier from the first party across the network to  
17 the second party;

18           allowing the second party to decrypt the encrypted identifier by using the  
19 group secret key and the negotiated secret key;

20           allowing the second party to use the identifier to ~~lookup~~ look up -the pre-  
21 shared secret key that was previously established between the first party and the  
22 second party; and

23           using the pre-shared secret key in forming at least one subsequent  
24 communication between the first party and the second party.

1           14.   (Cancelled).

1           15.   (Currently amended) The computer-readable storage medium of  
2 | ~~claim 14~~ claim 13, wherein establishing the negotiated secret key involves using  
3 the Diffie-Hellman method to establish the negotiated secret key.

1           16.   (Original) The computer-readable storage medium of claim 13,  
2 wherein the second party is a firewall through which the first party seeks to  
3 communicate.

1           17.   (Original) The computer-readable storage medium of claim 16,  
2 wherein the first party is a person seeking to communicate through the firewall  
3 from one of a number of possible Internet Protocol (IP) addresses.

1           18.   (Original) The computer-readable storage medium of claim 13,  
2 wherein the group secret key is one of a plurality of group secret keys maintained  
3 by the group.

1           19.   (Currently amended) A computer-readable storage medium storing  
2 instructions that when executed by a computer cause the computer to perform a  
3 method for facilitating a key exchange that operates with a pre-shared secret key  
4 and that hides identities of parties involved in the key exchange, the method  
5 comprising:

6 |       establishing a negotiated secret key between a first party and a second  
7 | party by performing communications between the first party and the second party  
8 | across a network;

9 |       wherein the communications between the first party and the second party  
10 | do not allow an eavesdropper to determine the negotiated secret key;

a<sup>3</sup>

11           allowing the first party to encrypt an identifier for the first party using a  
12 | first key that is a function of a group secret key and the negotiated secret key to  
13 | form an encrypted identifier;  
14           wherein the group secret key is known to members of a group, including  
15 | the first party and the second party, but is kept secret from parties outside of the  
16 | group;  
17           receiving the encrypted identifier at the second party from the first party  
18 | across the network;  
19 |        decrypting the encrypted identifier by using the group secret key and the  
20 | negotiated secret key;  
21           using the identifier to lookup the pre-shared secret key that was previously  
22 | established between the first party and the second party; and  
23           using the pre-shared secret key in forming at least one subsequent  
24 | communication between the first party and the second party.

1           20.   (Currently amended) An apparatus that facilitates a key exchange  
2 | that operates with a pre-shared secret key and that hides identities of parties  
3 | involved in the key exchange, the apparatus comprising:  
4 |        establishing a negotiated secret key between a first party and a second  
5 | party by performing communications between the first party and the second party  
6 | across a network;  
7 |        wherein the communications between the first party and the second party  
8 | do not allow an eavesdropper to determine the negotiated secret key;  
9 |        an encryption mechanism that is configured to encrypt an identifier for the  
10 | first party using a first key that is a function of a group secret key and the  
11 | negotiated secret key to form an encrypted identifier;

12 wherein the group secret key is known to members of a group, including  
13 the first party and the second party, but is kept secret from parties outside of the  
14 group;  
15 a communication mechanism that is configured to send the encrypted  
16 identifier from the first party across the network to the second party, so that the  
17 second party can decrypt the encrypted identifier by using the group secret key and  
18 the negotiated secret key in order to use the identifier to lookup the pre-shared  
19 secret key that was previously established between the first party and the second  
20 party; and  
21 wherein the communication mechanism is additionally configured to use  
22 the pre-shared secret key to encrypt at least one subsequent communication  
23 between the first party and the second party.

a<sup>3</sup>  
1 21. (Cancelled)

1 22. (Currently amended) The apparatus of ~~claim 21~~ claim 20, wherein  
2 establishing the negotiated secret key involves using the Diffie-Hellman method  
3 to establish the negotiated secret key.

1 23. (Original) The apparatus of claim 20, wherein the second party is a  
2 firewall through which the first party seeks to communicate.

1 24. (Original) The apparatus of claim 23, wherein the first party is a  
2 person seeking to communicate through the firewall from one of a number of  
3 possible Internet Protocol (IP) addresses.

1 25. (Original) The apparatus of claim 20, wherein the group secret key  
2 is one of a plurality of group secret keys maintained by the group.

1           26.   (Currently amended) An apparatus that facilitates a key exchange  
2 that operates with a pre-shared secret key and that hides identities of parties  
3 involved in the key exchange, the apparatus comprising:  
4           establishing a negotiated secret key between a first party and a second  
5 party by performing communications between the first party and the second party  
6 across a network;  
7           wherein the communications between the first party and the second party  
8 do not allow an eavesdropper to determine the negotiated secret key;  
9           a communication mechanism that is configured to receive an encrypted  
10 identifier at the second party from the first party across the network;  
11           wherein the encrypted identifier was produced by encrypting an identifier  
12 for the first party using a first key that is a function of a group secret key and the  
13 negotiated secret key;  
14           wherein the group secret key is known to members of a group, including  
15 the first party and the second party, but is kept secret from parties outside of the  
16 group;  
17           a decryption mechanism that is configured to decrypt the encrypted  
18 identifier by using the group secret key and the negotiated secret key;  
19           a lookup mechanism that is configured to use the identifier to ~~lookup~~ look  
20 up the pre-shared secret key that was previously established between the first party  
21 and the second party; and  
22           wherein the communication mechanism is additionally configured to use  
23 the pre-shared secret key in forming at least one subsequent communication  
24 between the first party and the second party.